FIG.1

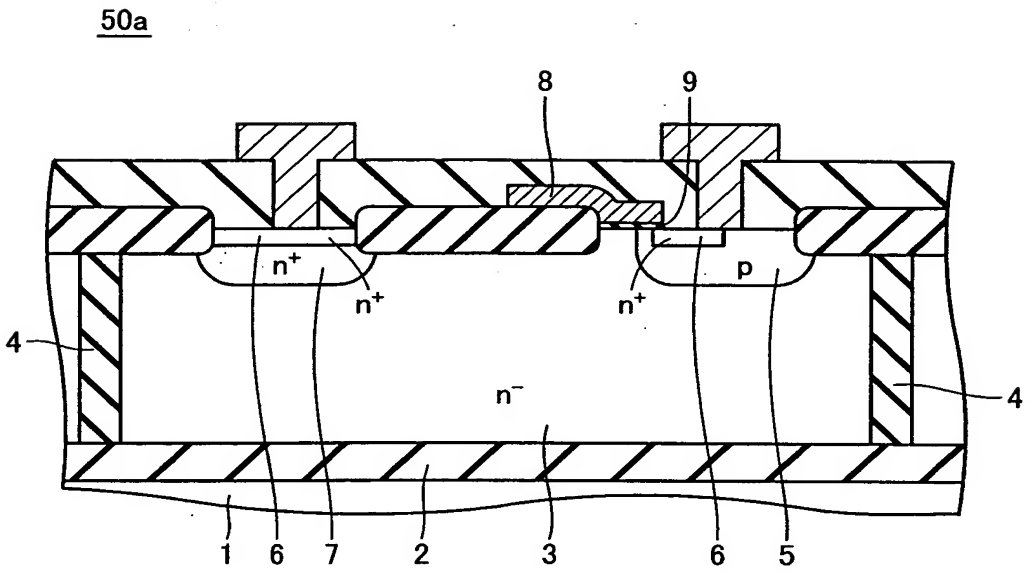


FIG.2A

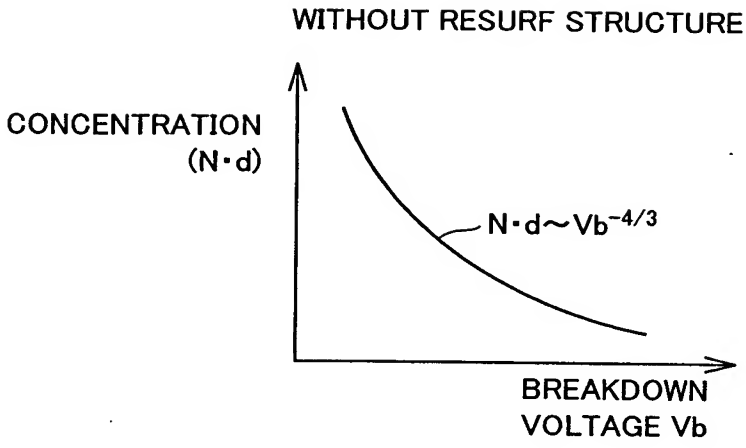

WITHOUT RESURF STRUCTURE
CONCENTRATION
(N·d)
N·d~Vb^-4/3
BREAKDOWN
VOLTAGE Vb

FIG.2B

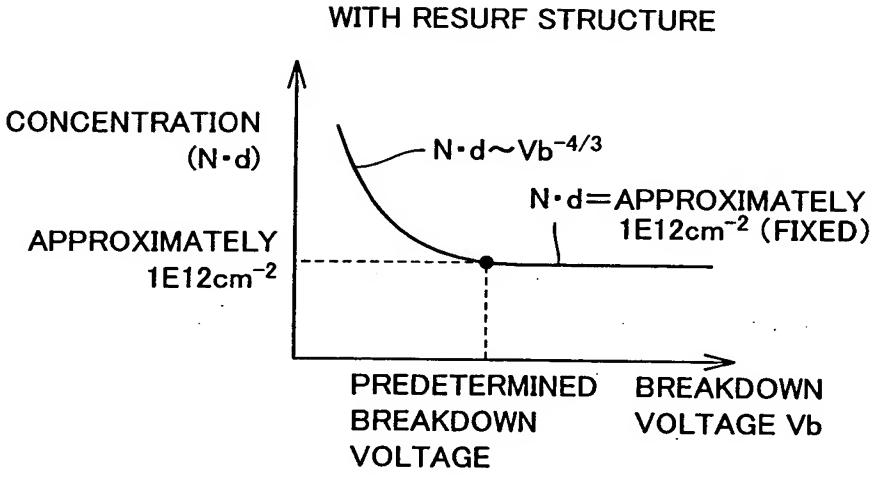

WITH RESURF STRUCTURE
CONCENTRATION
(N·d)
N·d~Vb^-4/3
N·d=APPROXIMATELY
1E12cm^-2 (FIXED)
APPROXIMATELY
1E12cm^-2
PREDETERMINED
BREAKDOWN
VOLTAGE
BREAKDOWN
VOLTAGE Vb

FIG.3

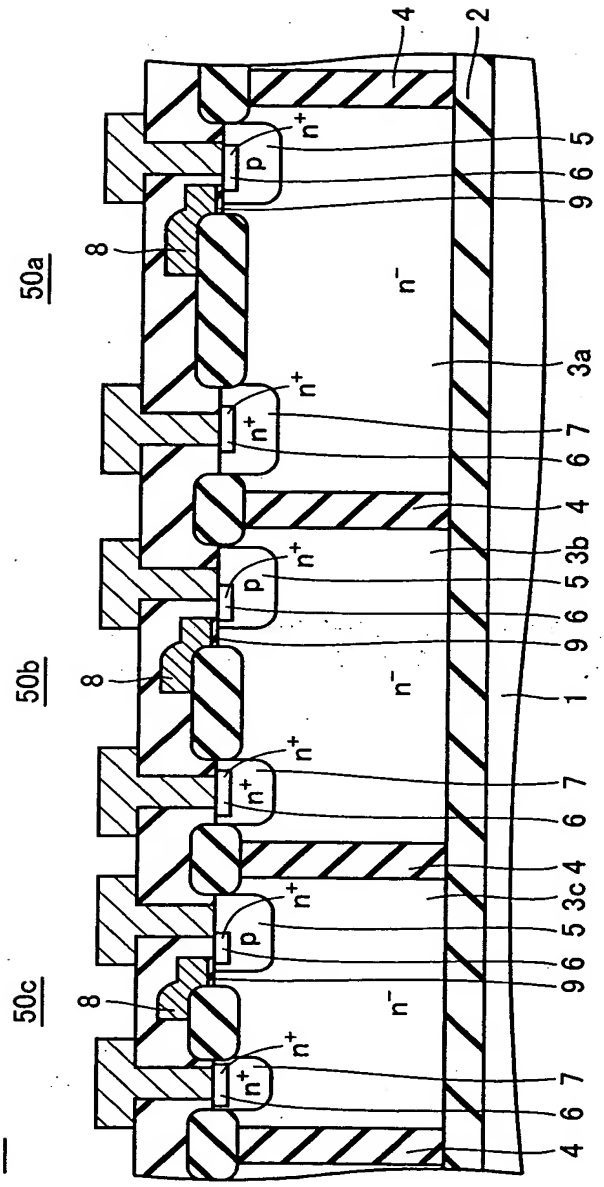


FIG.4

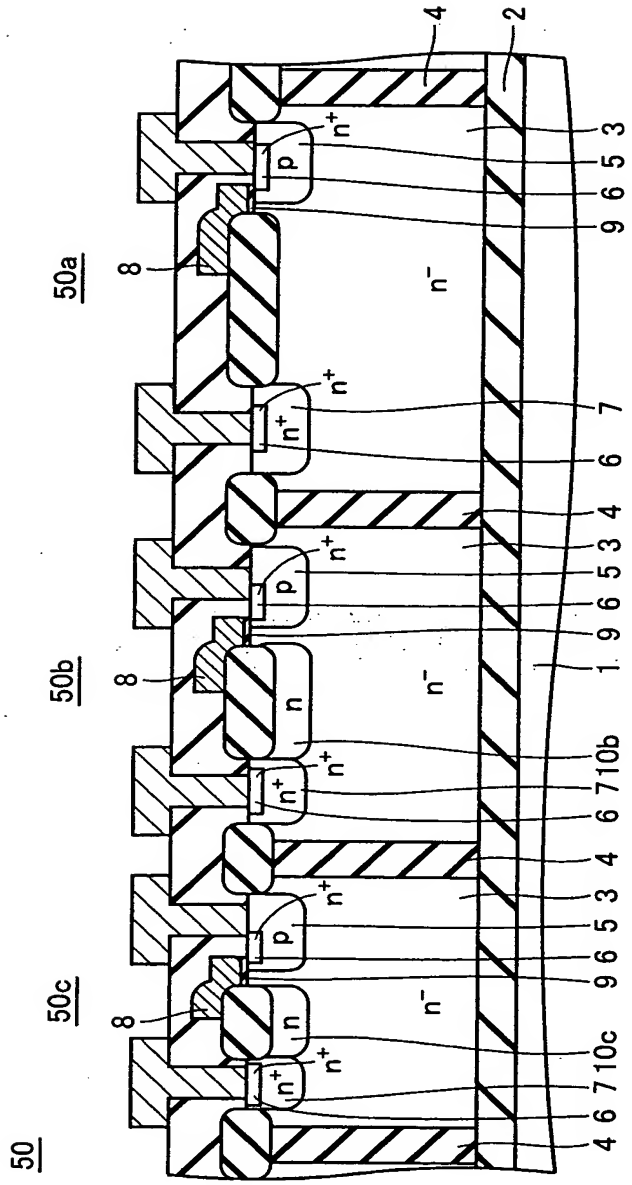


FIG.5

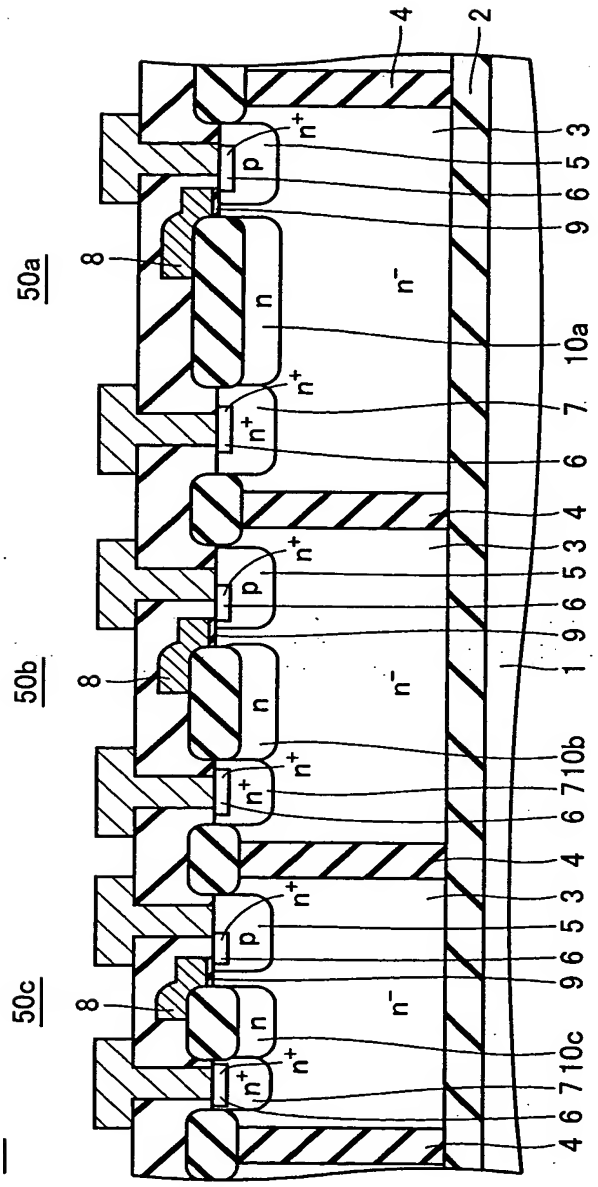
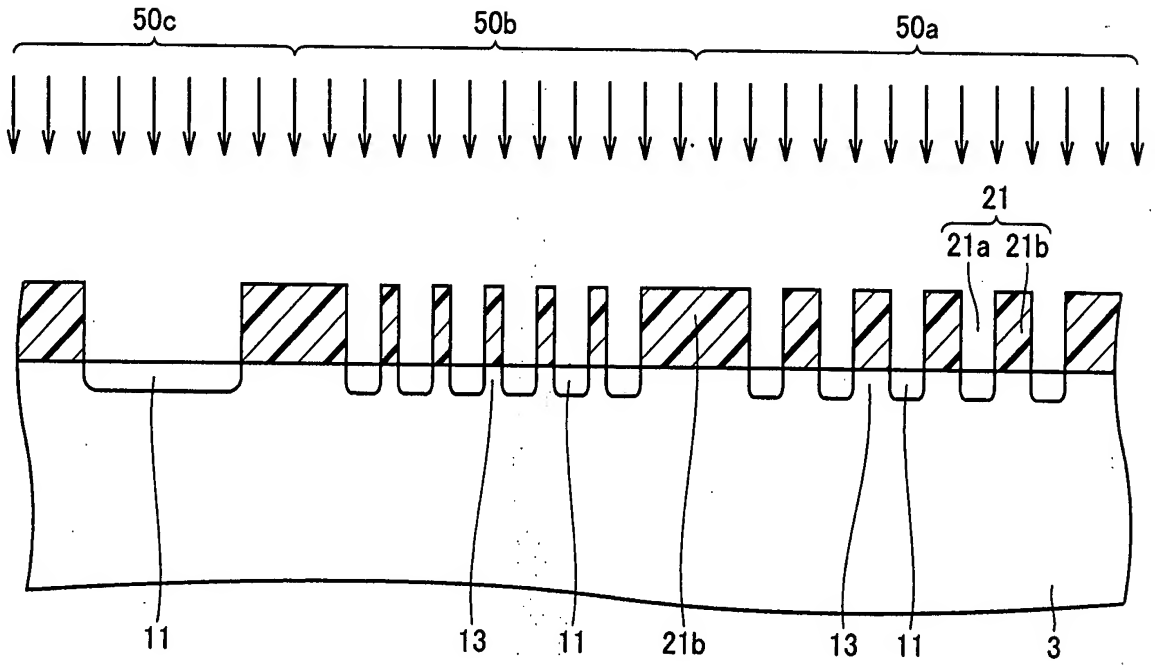


FIG.6



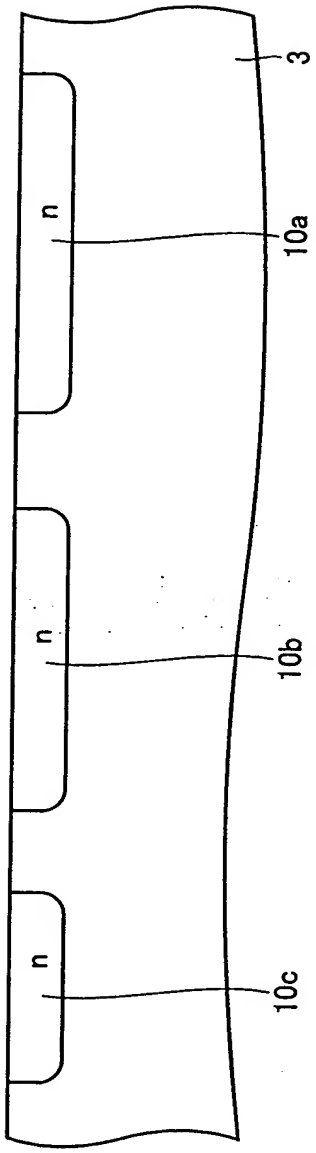


FIG.7

FIG.8

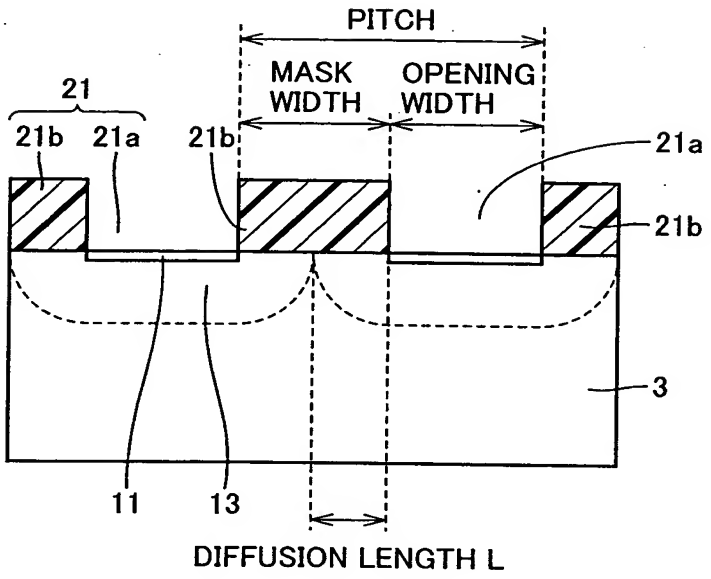

PITCH
MASK WIDTH
OPENING WIDTH
21
21b
21a
21b
21a
21b
3
11
13
DIFFUSION LENGTH L

FIG.9

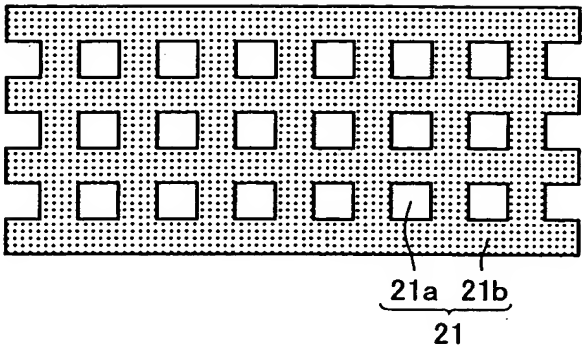


FIG.10

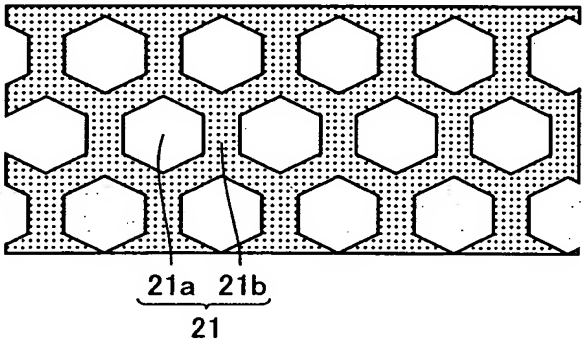


FIG.11A

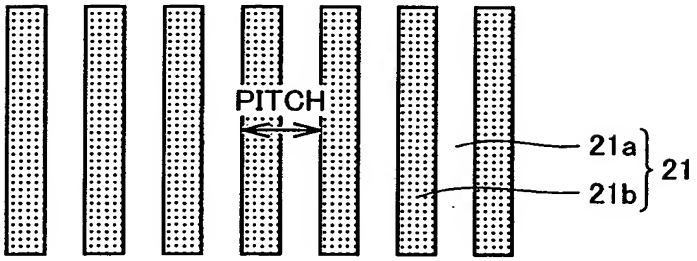


FIG.11B

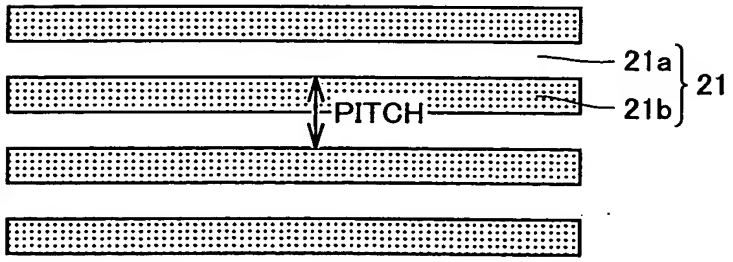


FIG.12

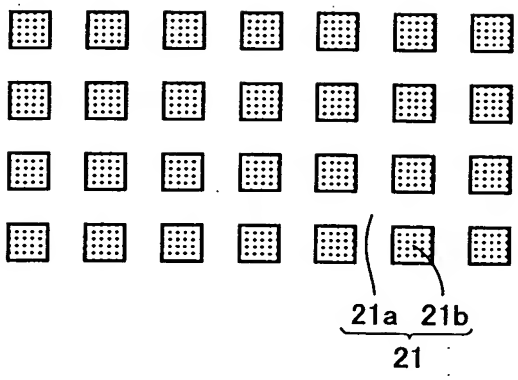


FIG.13

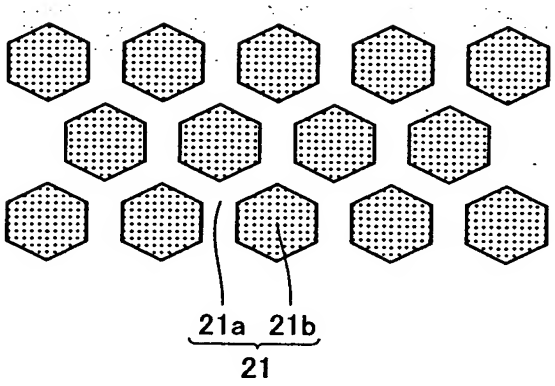


FIG.14

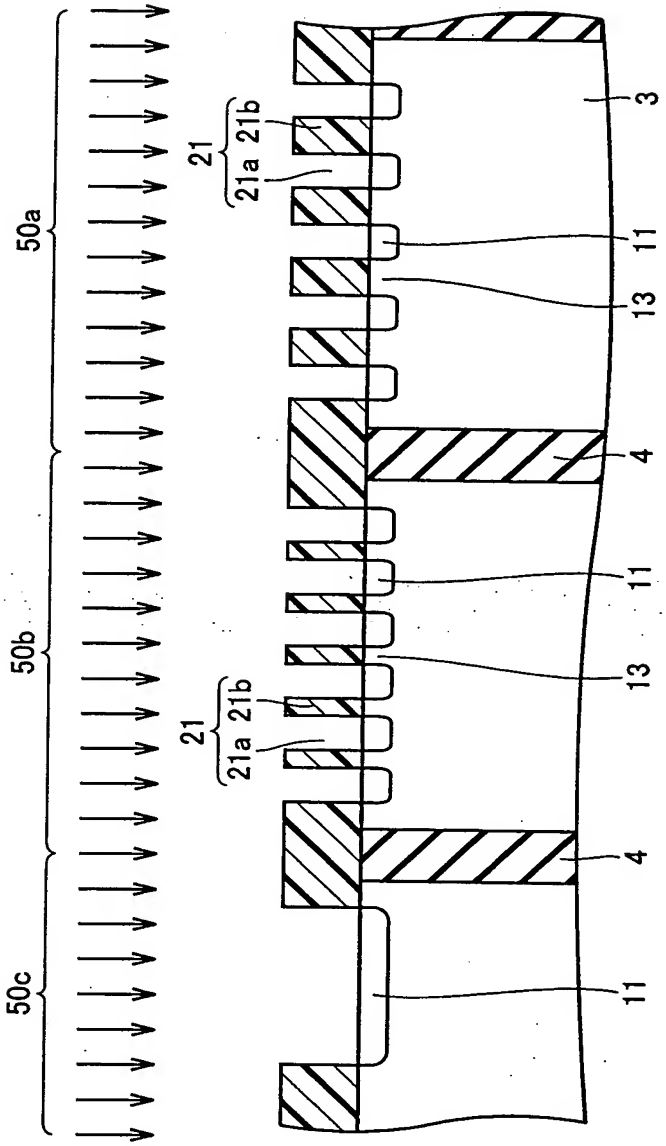


FIG.15

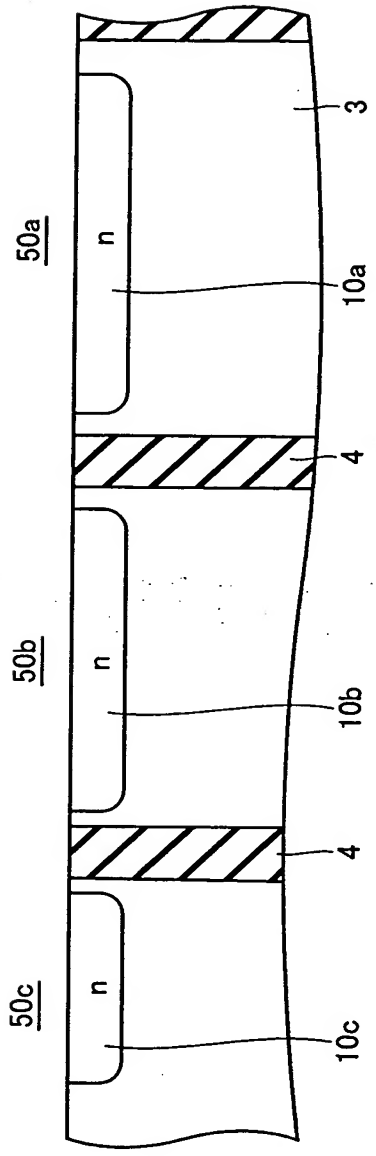


FIG.16

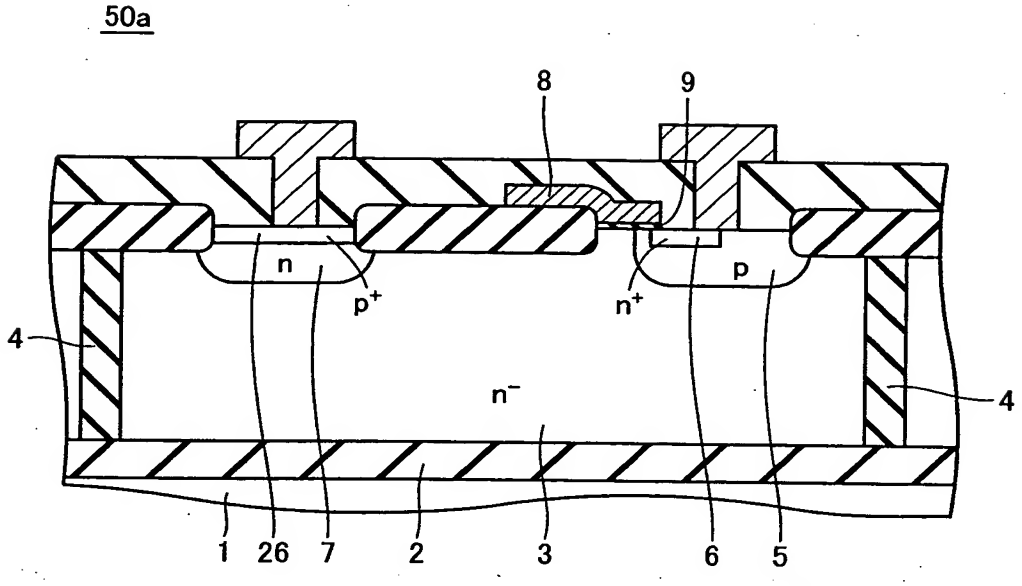


FIG.17

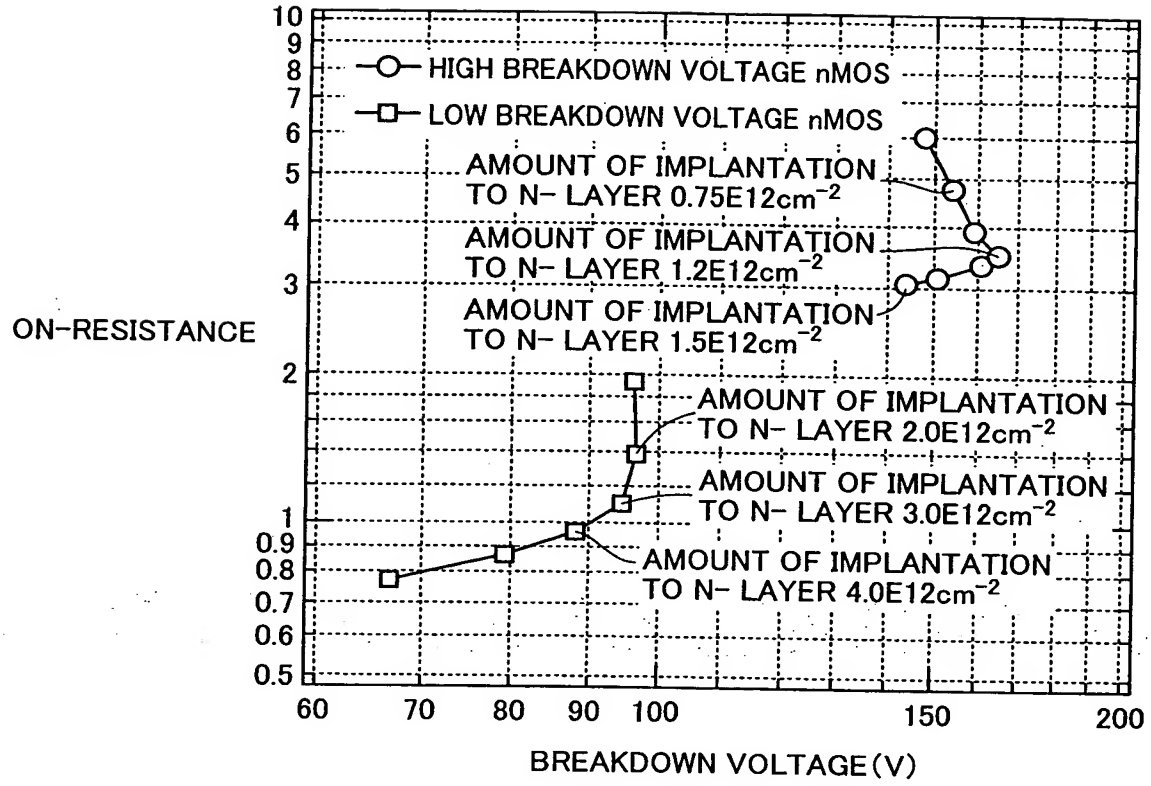

ON-RESISTANCE
10
9
8
7
6
5
4
3
2
1
0.9
0.8
0.7
0.6
0.5
60
70
80
90
100
150
200
BREAKDOWN VOLTAGE (V)
HIGH BREAKDOWN VOLTAGE nMOS
LOW BREAKDOWN VOLTAGE nMOS
AMOUNT OF IMPLANTATION TO N- LAYER 0.75E12cm-2
AMOUNT OF IMPLANTATION TO N- LAYER 1.2E12cm-2
AMOUNT OF IMPLANTATION TO N- LAYER 1.5E12cm-2
AMOUNT OF IMPLANTATION TO N- LAYER 2.0E12cm-2
AMOUNT OF IMPLANTATION TO N- LAYER 3.0E12cm-2
AMOUNT OF IMPLANTATION TO N- LAYER 4.0E12cm-2

FIG.18

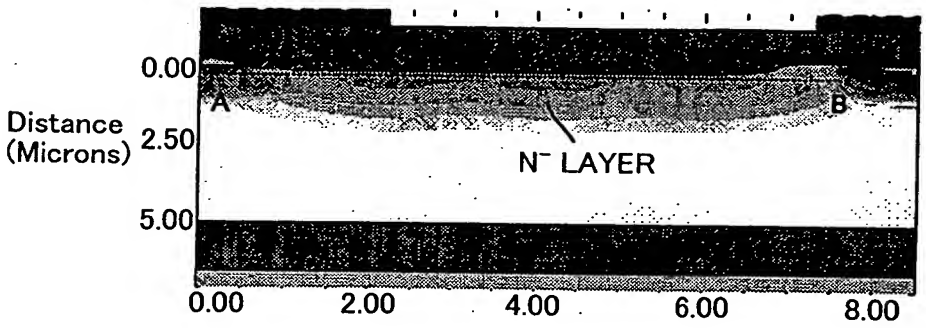
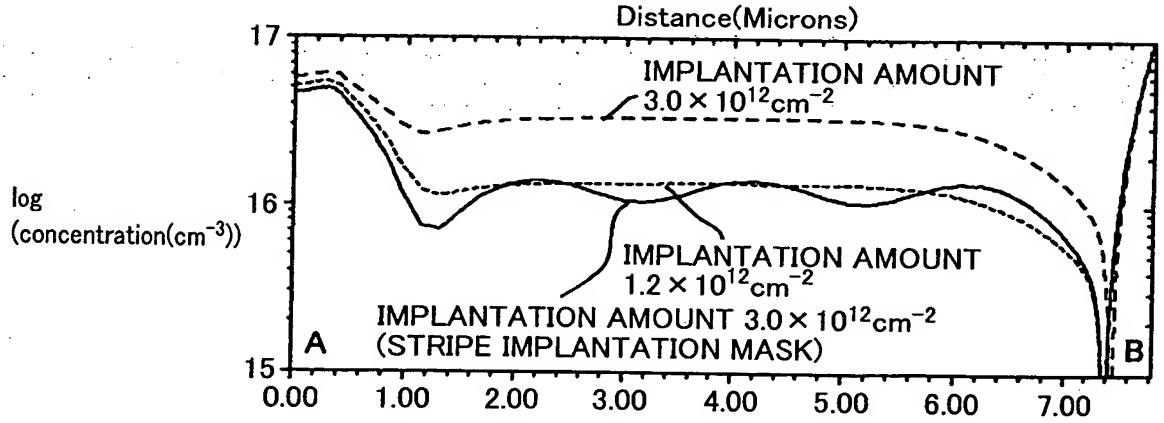

0.00
2.50
5.00
Distance
(Microns)
A
B
N⁻ LAYER
0.00
2.00
4.00
6.00
8.00

FIG.19


Distance(Microns)
17
16
15
log
(concentration(cm⁻³))
IMPLANTATION AMOUNT
3.0×10¹²cm⁻²
IMPLANTATION AMOUNT
1.2×10¹²cm⁻²
IMPLANTATION AMOUNT 3.0×10¹²cm⁻²
(STRIPE IMPLANTATION MASK)
A
B
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00